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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,522	06/17/2008	Theresa M. Reineke	10738-97A	7556

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EXAMINER	
SCHNIZER, RICHARD A	
ART UNIT	PAPER NUMBER
1635	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/596,522	REINEKE, THERESA M.	
	Examiner	Art Unit	
	Richard Schnizer	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,6-9,11,12,16-20,22-26,28-31 and 33-70* is/are pending in the application.

4a) Of the above claim(s) *1, 3, 6-8, 30, 31, and 33-55* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9, 11, 12, 16-20, 22-26, 28, 29, and 56-70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

An amendment was received and entered on 6/25/10.

Claims 10, 14, and 27 were canceled.

Claims 1, 3, 6-9, 11, 12, 16-20, 22-26, 28-31, and 33-70 remain pending.

Claims 1, 3, 6-8, 30, 31, and 33-55 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1/19/10.

Claims 9, 11, 12, 16-20, 22-26, 28, 29, and 56-70 are under consideration.

This action is NON-FINAL due to a new ground of rejection not necessitated by amendment. Claim 56 was inadvertently omitted from the rejection of claims 9, 11, 12, 16-20, and 22-29 under 35 U.S.C. 102(b) as being anticipated by Baker et al (WO 01/87348). This action rectifies that error. Provisional obviousness-type double patenting rejections are also added.

Rejections Withdrawn

The rejections of claims 12, 14, 16, 18, 19, 20, and 22-28 under 35 U.S.C. 102(a) as being anticipated by Reineke et al (MOLECULAR THERAPY, (MAY 2004) Vol. 9, Supp. [1], pp. S139-S139. MA 362) and by Liu et al (J. Am. Chem. Soc. 126: 7422-7423, 2004) are withdrawn in view of the Declarations under 35 USC 1.132 indicating that these articles describe research conducted by Theresa M. Reineke, and that the

other authors completed assignments and carried out work under the direction and supervision of Dr. Reineke.

The rejection of claims 12, 22, 25, 26, 56, 57, 59, and 70 under 35 U.S.C. 102(b) as being anticipated by Akelah et al (Eur. Poly. J. 31(9): 903-909, 1995) is withdrawn in view of the amendment requiring that the agent is at least one nucleic acid molecule or at least one polypeptide or both.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119(e) as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed applications, Application Nos. 60/531,399 and 60/574,131, fails to provide adequate support in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. The '39 and '131 applications fail to provide support for most of the species of nucleic acid molecule set

forth in instant claims 19 and 28, e.g. mRNA, tmRNA, tRNA, rRNA, siRNA, shRNA, PNA, artificial chromosomes, cDNA, PCR products, restriction fragments, and ribozymes. All claims under consideration embrace at least some of these species, and therefore do not have benefit of support from the priority documents. The effective filing date of the claims is therefore 12/20/04.

Response to Arguments

Applicant's arguments filed 6/25/10 have been fully considered but they are not persuasive.

Throughout the arguments relating to priority at pages 17-19, Applicant refers to pages in the US Provisional Application 60/531,999 such as 16, 17, and 21-23. Because the specification of this application is only 7 pages long, it is unclear to what information Applicant intends to refer.

Applicant asserts that the written description requirement does not require exact description of the subject matter claimed, e.g. description of a representative number of species does not require the description to be of such specificity that it would provide individual support for each species that the genus embraces. More specifically, Applicant asserts that the disclosure in priority documents of the genus of RNA hairpins provides an adequate written description for the species of shRNAs. This is unpersuasive, the genus of hairpin RNAs is vast and embraces a wide variety of molecules including self-stabilized complementary RNAs, snRNAs, miRNAs, transition state inhibitors of ricin A chain, ribozymes, ribosomal RNAs, tRNAs, and others. It is

unreasonable to conclude that disclosure of the term “hairpin” in the context of oligonucleotides, without any further definition of the term, would immediately convey to one of skill in the art at the time of the invention that Applicant wished to disclose shRNAs or any other specific hairpin RNA.

Applicant asserts that complexes of cellular delivery polymers and PCR products or restriction fragments in general may be found in the disclosure of the ’131 priority document at paragraph 47. This paragraph refers to "a technology for producing the NF-kappa beta decoy for use in the present invention”, and indicates that conventional biochemical methods may be used such as DNA synthesis, PCR amplification, or restriction digestion. The disclosure that a specific molecule, i.e. a specific decoy, may be prepared by PCR amplification or restriction digestion does not convey that applicant intended to form complexes with PCR products generally, as applicant asserts. Accordingly, Applicant's argument regarding PCR products and restriction fragments is unpersuasive.

Applicant asserts that the term “PNA” (peptide nucleic acid) finds support in the disclosure that oligonucleotides may contain modified nucleotides and methyl phosphonate groups containing no electric charge. This is unpersuasive because this disclosure provides no support for a peptide backbone which completely lacks a phosphate. The passage relied no by Applicant does not account for, either directly or indirectly, the very specific structure that is a peptide nucleic acid backbone.

At page 18, Applicant asserts that the priority documents provide support for ssRNA, dsRNA, ssDNA, dsDNA, DNA/RNA hybrid molecules, plasmids, gene therapy

constructs, and antisense constructs. The Examiner never took the position that these species were not supported. However, disclosure of these species, even in combination with the disclosure of hairpins, decoys, modified nucleotides, methyl phosphonate groups containing no electric charge, and DNAs and RNAs generally, does not provide an adequate written description to provide support for the instantly claimed species of mRNA, tmRNA, tRNA, rRNA, siRNA, shRNA, PNA, artificial chromosomes, cDNA, PCR products, restriction fragments, and ribozymes. There is nothing of record to suggest that Applicant contemplated these species at the time the priority documents were filed. Accordingly, instant claims that read on these species have an effective filing date of 12/20/04.

Drawings

The application as filed contained no drawings.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9, 11, 12, 16-20, 22-29, and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Baker et al (WO 01/87348).

A search of Medline and CAPLUS databases for the claim term "polyhydroxylamidoamine" revealed only 3 citations, all of which were authored by the instant inventor. Thus the term "polyhydroxylamidoamine" is not a widely recognized term of art. The instant specification does not provide a limiting definition for the term, therefore it has been given it's broadest reasonable interpretation. This interpretation includes molecules that include several hydroxyl groups and at least one amidoamine group.

Baker taught polyamidoamine dendrimers modified with carbohydrate residues, such as mannose residues, for improving dendrimer binding to target cells (see abstract; page 42, lines 13-21; and page 44, line 26). Each carbohydrate is considered to be a polyhydroxyl group, so Baker taught polyhydroxyls conjugated to amidoamines, i.e. polyhydroxylamidoamines. These polyhydroxylamidoamines are also polyglycoamidoamines due to the inclusion of plural mannose residues. Baker also taught that the dendrimers of the invention could be used to form complexes with agents to form pharmaceutical compositions delivery to cells, and specifically disclosed protein and nucleic acid delivery, including antisense, oligonucleotide, and gene delivery. See e.g. page 3, lines 9-21; paragraph bridging pages 4 and 5, especially page 5 at lines 1-15; page 11, lines 14-16; section IX at pages 53-54; page 56, lines 1-18; and section XII at pages 57-60. Oligonucleotides may be chemically modified by covalent attachment to the dendrimers (see e.g. example 5 at pages 64-68).

Baker envisions the treatment of in vitro and ex vivo in cultured and primary cells. Such cells must be grown in containers, so Baker inherently taught compositions and containers comprising cells comprising the complexes. See section VIII at page 50.

Baker also envisions kits comprising dendrimeric nanodevices that comprise a therapeutic agent (page 24, lines 18-24).

Baker also envisions complexes in which the active agent is a polypeptide. See page 28, lines 24-26; and page 36, lines 21-30.

Thus Baker anticipates the claims.

Response to Arguments

Applicant's arguments filed 6/25/10 have been fully considered but they are not persuasive.

Applicant disagrees with the Examiner's interpretation that the claim term "polyhydroxylamidoamine" reads on the polyamidoamine dendrimers of Baker. Applicant relies for support on the specification at paragraphs 57-59. More specifically, Applicant relies on the disclosure that the term "polymer" includes poly(hydroxylamidoamine); the disclosure dendritic macromolecules, and also carbohydrate-containing biodegradable polyesters, the disclosure that poly(hydroxylamine)s include but are not limited to poly(glycoamidoamine)s, (any carbohydrate) and poly(L-tartaramidoamine)s, and the disclosure that poly(hydroxylamine)s may be prepared by condensation of an appropriately substituted diester or other substitutions that react with amines such as acid chlorides, carboxylic

acids, lactones, anhydrides, etc. and an appropriately substituted diamine comonomer. Based on these disclosures Applicant submits that the specification provides sufficient guidance as to the meaning of the term "polyhydroxylamidoamine", and that the polyamidoamine dendrimers of Baker are not the same as those instantly claimed. This is unpersuasive because none of the passages relied on by Applicant provides any definition that would exclude the polyamidoamine dendrimers of Baker from the claimed genus. Each of the passages relied on by Applicant uses open language and indicates particular compounds and types of compounds that may be included in the claimed genus. Nothing in these passages limits the claimed genus in a way that excludes the compounds of Baker.

Applicant further asserts that the specification distinguishes between polyhydroxylamidoamines and dendrimers by stating that "the term polymer includes poly(hydroxylamidoamine), dendritic macromolecules, and also carbohydrate-containing biodegradable polyesters" at page 16, paragraph 57. This is unpersuasive because there is nothing in this passage that suggests that the subgenuses of polyhydroxylamidoamines and dendrimers cannot overlap and share species such as the polyamidoamine dendrimers of Baker. For these reasons the rejection is maintained.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 9, 11, 12, 16-20, 22-26, 28, and 56-70 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over

claim 18 of copending Application No. 10/596516. Although the conflicting claims are not identical, they are not patentably distinct.

The '516 application claims a method of delivering to a mammal an oligonucleotide decoy wherein the decoy is delivered by a polymeric vector. The '516 specification discloses that polymeric vectors bind DNA and include the polymers of the instant invention, i.e. poly(glycoamidoamine)s (any carbohydrate) and poly(L-tartaramidoamine)s, that may be prepared by condensation of an appropriately substituted diester or other substitutions that react with amines such as acid chlorides, carboxylic acids, lactones, anhydrides, etc. and an appropriately substituted diamine comonomer. See paragraphs 56-78.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. Note that, although the instant application and the '516 application do not share a common inventor, they are commonly assigned.

Claims 9, 11, 12, 16-20, 22-26, 28, and 56-70 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11-17 and 19-32 of copending Application No. 10/596520. Although the conflicting claims are not identical, they are not patentably distinct.

The '520 application claims methods of treating diseases by administration of an oligonucleotide decoy wherein the decoy is delivered by a polymeric vector.

The '516 specification discloses that polymeric vectors bind DNA and include the polymers of the instant invention, i.e. poly(glycoamidoamine)s (any carbohydrate) and poly(L-tartaramidoamine)s, that may be prepared by condensation of an appropriately substituted diester or other substitutions that react with amines such as acid chlorides, carboxylic acids, lactones, anhydrides, etc. and an appropriately substituted diamine comonomer. See paragraphs 56-78.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 9, 12, 16-20, 22-26, 28, 29, and 56 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 12/134,556. Although the conflicting claims are not identical, they are not patentably distinct.

The '556 application claims complexes between a nucleic acid molecule or polypeptide and a trehalose click polymer comprising repeating units of an oligoamine conjugated to a trehalose carbohydrate, wherein the conjugation comprises an amide bond. These polymers are considered to be poly(glycoamidoamine)s. The instantly claimed nucleic acid molecules are recited in '556 claims 9, 19, and 13.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner(s) should be directed to Richard Schnizer, whose telephone number is 571-272-0762. The examiner can normally be reached Monday through Friday between the hours of 6:00 AM and 3:30. The examiner is off on alternate Fridays, but is sometimes in the office anyway.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Christopher Low, can be reached at (571) 272-0951. The official central fax number is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

/Richard Schnizer/
Primary Examiner, Art Unit 1635